



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,587	05/26/2005	Jean-Philippe Poirot-Crouvezier	123210	7152
27049 7590 12/14/2010 OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850				
EXAMINER				
CANTELMO, GREGG				
ART UNIT		PAPER NUMBER		
1726				
NOTIFICATION DATE		DELIVERY MODE		
12/14/2010		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction27049@oliff.com

jarnstrong@oliff.com

Office Action Summary**Application No.**

10/528,587

Applicant(s)POIROT-CROUVEZIER, JEAN-
PHILIPPE**Examiner**

Gregg Cantelmo

Art Unit

1726

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 11-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3/21/05, 10/27/10
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Response to Preliminary Amendment

1. The preliminary amendment received March 21, 2005 has been entered. Action on the merits of claims 11-20 follows.

Priority

2. Acknowledgment is made of applicant's claim for priority however, no certified copies of the priority documents have been received.

Information Disclosure Statement

3. The information disclosure statements filed March 21, 2005 and October 27, 2010 have been placed in the application file and the information referred to therein has been considered as to the merits.

Drawings

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, more than one flow channel connected to a reactive fluid source and to a tank (claim 11), two flow channels connected in respective manners (claim 12), the porous trapping means (claim 15) and tank heating (claim 20) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure

number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claims 11-20 are objected to because of the following informalities: The preamble of the claims should be "An electric power source" and "A control process". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 11-20 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for at least one flow channel wherein one flow channel comprises an inlet and an outlet respectively connected to a reactive fluid source and to a tank, does not reasonably provide enablement for more than one flow

channel (i.e. more than at least one flow channel) to comprise an inlet and an outlet respectively connected to a reactive fluid source and to a tank. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. Rather it would appear that only one flow channel comprising an inlet and outlet respectively connected to a reactive fluid source and a tank is disclosed. The drawings and specification fail to support more than one channel connected to the reactive fluid source and to a tank as the scope of claim 11 unduly encompasses.

Claims 15 and 16 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The porous materials or salt as a water trapping material critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). The specification broadly recites porous materials and salts but fails to reasonably enablement as to what materials were readily appreciated at the time the claimed invention was made as those materials which are water trapping materials in the tank.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 11-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims recite the phrase "means for" and a claim limitation will be presumed to invoke 35 U.S.C. 112, sixth paragraph, if it meets the following 3-prong analysis:

- (A) the claim limitations must use the phrase "means for" or "step for;"
- (B) the "means for" or "step for" must be modified by functional language;

and

- (C) the phrase "means for" or "step for" must not be modified by sufficient structure, material, or acts for achieving the specified function.

It is unclear as to whether the claims intend to invoke 35 U.S.C. 112, second paragraph for while the claims use the term "means for" the claims also appear to modify various "means for" with sufficient structure, material or acts for achieving the specified function. For example, the "means for feeding the fuel cell" is modified with structural "means for closing the inlet valve" (claim 11). Dependent claims fail to remedy the deficiency of claim 11 and further appear to improperly employ the phrase "means for". For example, the means for physical or chemical trapping of water" (claim 14) is further claimed to comprise a porous material (claim 15). These examples appear to show a failure to comply with proper invocation of 35 U.S.C. 112, sixth paragraph. If Applicant intends to invoke 35 U.S.C. 112, sixth paragraph, then Applicant is required to amend to claims to meet the 3-prong analysis to properly invoke 35 U.S.C. 112, sixth paragraph. If Applicant does not intend to invoke 35 U.S.C. 112, sixth paragraph, Applicant is advised to remove the term "means for" from the claims.

As the claims do not appear to meet the 3-prong analysis, the claims are interpreted in a manner in accordance without proper invoking of 35 U.S.C. 112, sixth paragraph.

Clarification is respectfully requested.

Claim 12 is indefinite it recites "comprising two flow channels" however claim 11 already recites "at least one flow channel". The exact number of flow channels are unclear since claim 12 fails to clearly link the flow channels therein back to the "at least one flow channel" of claim 11. The scope and coverage of the flow channels of claims 11 and 12 are rendered unclear. It appears that only one flow channel 5a comprising an inlet 1a and outlet 1b respectively connected to a reactive fluid source (not shown) and a tank 10 is supported. There is no clear showing of multiple flow channels connected in this manner, all associated with the reactive fluid source and tank.

The term "much" in claim 17 is a relative term which renders the claim indefinite. The term "much" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Neither the claims nor the specification give any definition of what the term "much" encompasses relative to the volumetric relationship between the tank and the fuel cell reactive fluid volume. While the specification gives examples of volumetric differences this is not held to clearly limit the term "much greater" as the examples fail to clearly delimit the term and the scope of the term "much greater" as recited in claim can be significantly different in value relative

to even the examples in the instant application. Applicant is advised to delete the term "much" to overcome this rejection.

Claims 18-20 are indefinite. The claim recites filling the tank with reactive fluid and closing the inlet valve of the flow channel for a predetermined first time period. This language is not clear for it appears that step of filling the tank can only be performed while the inlet valve connected to the reactive fluid source is opened since the only source for filling the tank is from the reactive fluid source itself. Thereafter the valve is closed for a first predetermined time so that the reactive fluid is provided from the tank (Fig. 4). Thereafter the inlet valve is opened for a second predetermined time as recited in the claim. The ambiguity lies in the fact that the tank filling process appears to imply or encompass filling the tank with reactive fluid when the inlet is closed which is not possible according to the instant invention. Clarification is respectfully requested.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 11-14 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,798,186 (Fletcher).

Fletcher teaches of an electric power source 200 comprising a fuel cell 210 wherethrough there passes at least one flow channel 261 comprising an inlet and an outlet respectively connected to a reactive fluid source 220 and to a tank 222, an inlet

valve 221 being arranged between the reactive fluid source and the inlet of the flow channel, power source comprising: means for feeding the fuel cell with reactive fluid from the tank 222 via recycling line 225, for a predetermined first time period, and comprising means for closing the inlet valve 221 for said first time period, and means for filling the tank 222 with reactive fluid and for evacuating to the tank water accumulated in the fuel cell, during a predetermined second time period much shorter than the first time period, and comprising means for opening the inlet 221 valve during said second time period (Fig. 3 as applied to claim 11).

Regarding the functionality of claim 11:

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a

claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Fletcher discloses a fuel cell having the same structural features as recited in claim 11 and the various valves are capable of being controllable in any manner including the functional control methodology of claim 11.

A second flow channel is provided which is connected to an oxidant source 230 and a second tank 232 (Fig. 3). Thus Fletcher teaches of first and second flow channels 261 and 262 respectively connected to first and second tanks 222 and 232 and a hydrogen source 220 and 230 (Fig. 3 as applied to claim 12).

The tank 222 is arranged at a lower level than the fuel cell 210 to trap water (Fig. 3 as applied to claim 13) and thus has a physical design for trapping water (as applied to claim 14).

9. Claims 11, 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,014,976 (Blackmer).

Blackmer teaches of an electric power source comprising a fuel cell wherethrough there passes at least one flow channel 6a comprising an inlet and an outlet respectively connected to a reactive fluid source (not shown) and to a tank 50, an inlet valve being arranged between the reactive fluid source and the inlet of the flow channel, power source comprising: means for feeding the fuel cell with reactive fluid from the tank via recycling line 51 for a predetermined first time period, and comprising

means for closing the inlet valve 19a for said first time period, and means for filling the tank 50 with reactive fluid and for evacuating to the tank water accumulated in the fuel cell, during a predetermined second time period much shorter than the first time period, and comprising means for opening the inlet 19a valve during said second time period (Figs. 1-4 as applied to claim 11).

Regarding the functionality of claim 11:

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural

limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Blackmer discloses a fuel cell having the same structural features as recited in claim 11 and the various valves are capable of being controllable in any manner including the functional control methodology of claim 11.

The tank 50 is arranged at a lower level than the fuel cell to trap water (Figs. 1-4 as applied to claim 13) and thus has a physical design for trapping water (as applied to claim 14).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
10. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fletcher as applied to claim 14 above, and further in view of JP 2002-246049A (Ikegami).

The difference between claim 15 and Fletcher is that Fletcher does not teach of the trapping means comprising a porous material.

Ikegami teaches that it is known in the fuel cell art to employ porous moisture absorbing materials to absorb water from fuel cell exhaust (abstract).

The use of a porous moisture absorbing materials to absorb water from fuel cell exhausts is known in the art for the purpose of removing water/condensation from a fuel cell exhaust. Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Fletcher by adding a water absorbing material to the exhaust line of Fletcher as taught by Ikegami since it would have improved the water absorbing function of the water recovery tanks and effectively separated water/condensation from the fuel cell exhaust. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07. See also *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007).

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fletcher as applied to claim 14 above, and further in view of U.S. Patent No. 6,562,498 (Walsh).

The difference between claim 15 and Fletcher is that Fletcher does not teach of the trapping means comprising a salt.

Walsh teaches that it is known in the fuel cell art to employ salts to absorb water from fuel cell exhaust (abstract and col. 6, ll. 39-56).

The use of a salt to absorb water from fuel cell exhausts is known in the art for the purpose of removing water/condensation from a fuel cell exhaust. Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Fletcher by adding a water absorbing salt to the exhaust line of Fletcher as taught by Walsh since it would have improved the water absorbing function of the water recovery tanks and effectively separated water/condensation from the fuel cell exhaust. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP § 2144.07. See also *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fletcher as applied to claim 11 above, and further in view of U.S. Patent Application Publication No. 2001/0010874 (Herdeg).

The difference between claim 17 and Fletcher is that Fletcher does not teach of the volume of the tank is greater than the volume of the reactive fluid in the cell.

The selection of the tank to be larger than the volume of the reactive fluid in the cell would have provided the predictable result of increasing the length of operation of the fuel cell as a larger tank would be capable of storing more water produced during cell operation. (see Herdeg para. 53).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Fletcher by configuring the

tanks to be large so as to be of a size sufficient to collect a large amount of exhaust/water from a fuel cell during prolonged operation.

Allowable Subject Matter

12. While no prior art is applied to the control process of claims 18-20, a final statement regarding patentability cannot be affirmed pending resolution of the outstanding 112 issues above.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Application Publication No. 2004/0229087 is cited of interest.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gregg Cantelmo/
Primary Examiner
Art Unit 1726